

ABSTRACT OF THE DISCLOSURE

A method is disclosed to treat the wall of a blood vessel from within the lumen thereof with a radiation catheter that includes a working or radiotherapy lumen, a longitudinally channeled distal balloon, and a balloon inflation lumen. The method includes steps of inserting the catheter into the vessel lumen until the balloon is adjacent a target site of the vessel wall to be treated, inflating the balloon to substantially center the catheter radiotherapy lumen within the vessel lumen at the target site while allowing perfusion of blood past the inflated balloon through channels formed by the balloon, advancing a radioactive source into the catheter radiotherapy lumen to position the source within a region of that lumen along a portion of the catheter occupied by the balloon; and withdrawing the source after it has been positioned within that region of the radiotherapy lumen for a predetermined interval of time.